

CLAIMS

1) Method to communicate or control a remote deexcitation by using isomer nuclides, in which:

- 5 - one prepares two or several samples containing at least one isomer nuclide having a metastable state by irradiation with the means of either a source of gamma rays emitted in a cascade, or a generator of gamma rays coming from Bremsstrahlung of accelerated particles, with a sufficient energy to excite the aforementioned isomer nuclide in his metastable state,
- 10 - one causes the modulated stimulation of the deexcitation by X-ray or gamma irradiation of one or more of the aforementioned samples, the masters,

characterized in that one obtains an additional modulated deexcitation of the other samples, the slaves, during the modulated stimulation of the deexcitation of the master samples, independently of the distances separating the samples, and of the mediums
15 separating these samples or in which they are placed.

2) Method according to claim 1 characterized in that one uses samples containing at least one isomer nuclide having a half-life duration of one metastable state from less than one second to several years, for example: Niobium ($^{93}\text{Nb}^{41\text{m}}$), Cadmium ($^{111}\text{Cd}^{48\text{m}}$), Cadmium ($^{113}\text{Cd}^{48\text{m}}$), Cesium ($^{135}\text{Ce}^{55\text{m}}$), Indium ($^{115}\text{In}^{49\text{m}}$), Tin
20 ($^{117}\text{Sn}^{50\text{m}}$), Tin ($^{119}\text{Sn}^{50\text{m}}$), Tellurium ($^{125}\text{Te}^{52\text{m}}$), Xenon ($^{129}\text{Xe}^{54\text{m}}$), Xenon ($^{131}\text{Xe}^{54\text{m}}$), Hafnium ($^{178}\text{Hf}^{72\text{m}}$), Hafnium ($^{179}\text{Hf}^{72\text{m}}$), Iridium ($^{193}\text{Ir}^{77\text{m}}$), Platinum ($^{195}\text{Pt}^{78\text{m}}$).

3) Method according to one of the claims 1 or 2 characterized in that one uses samples containing several excited isomer nuclides of which the gamma response of each one of
25 them is measured simultaneously.

4) Method according to anyone of the claims 1, 2 or 3 characterized in that one uses samples containing at least one excited isomer nuclide of which the gamma response is made up of a several lines measured simultaneously.

5) Method according to anyone of the claims 1, 2, 3 or 4 characterized in that one uses
30 samples in various physical forms or various chemical forms.

6) Method according to anyone of the claims 1, 2, 3, 4 or 5 characterized in that one uses a group of samples of which one at least underwent a physical or a chemical transformation after irradiation.

7) Method according to anyone of the claims 1, 2, 3, 4, 5 or 6 characterized in that one
5 uses a stimulation modulated in amplitude on at least one master sample.

8) Method according to anyone of the claims 1, 2, 3, 4, 5, 6 or 7 characterized in that one uses a stimulation modulated in the time on at least one master sample.

9) Device of implementation of the method according to anyone of the claims 1 to 8 characterized in that it includes:

10 - An apparatus of excitation irradiating two or several samples containing at least one isomer nuclide having one metastable state by either a source of gamma rays emitted in a cascade, or of a generator of gamma rays coming from the Bremsstrahlung of accelerated particles, with a sufficient energy to excite the
 aforementioned isomer nuclide to its metastable state,

15 - one or several apparatuses of modulated stimulation deexciting by X-rays or gamma irradiation one or several of the samples irradiated previously, the master or the masters,

 - one or several apparatuses of detection measuring the gamma rays emitted by one or more of the other samples irradiated previously, the slave or the slaves.

20 10) Device according to claim 9 characterized in that the samples of each group are placed on only one support in the apparatus of excitation, thereafter being separated and being positioned in relation between each other in one or more apparatuses of modulated stimulation and in one or more apparatuses of detection.

25 11) Device according to claim 9 characterized in that the samples of each group are placed on several supports in the apparatus of excitation, the supports being separated and being thereafter positioned in synchronous relation between each other in one or more apparatuses of modulated stimulation and in one or more apparatuses of detection.

30 12) Device according to one of the claims 9, 10 or 11 characterized in that the groups of samples are arranged according to a defined scheduling allowing the transmission of

complex messages.

13) Use of the method according to anyone of the claims 1 to 8 to remotely transmit information, in particular emergency signals.